

U.S. Patent Application of Miyamoto et al. – Serial No. 09/866,954
Response to ex parte Quayle Action – Art Unit: 2634

IN THE CLAIMS:

Please amend claims 1, 2 and 3 as follows.

1. (currently amended) A decision feedback equalizer for suppressing intersymbol interference by feeding back ~~decided~~ already determined data so as to equalize the waveform distortion of a received radiowave ~~affected~~ caused by the fading in any radiowave transmission medium of the received radiowave, comprising:

impulse response estimating means for estimating an impulse response of the radiowave transmission medium;

a first waveform equalizing means for ~~waveform~~ equalizing the waveform of the received wave, ~~on the base of~~ based on an intersymbol interference component corresponding to more than two symbol-delayed wave and an estimated intersymbol interference component corresponding to one symbol-delayed wave, by ~~the use of~~ using an impulse response ~~of~~ from the radiowave transmission medium estimated by said impulse response estimating means, thereby producing an equalized signal, including an intersymbol interference component corresponding to an estimated one symbol-delayed wave, said estimated one symbol-delayed wave being produced by the use of an intersymbol interference component corresponding to more than two symbol-delayed ~~wave~~ waves;

a second waveform equalizing means for ~~waveform~~ equalizing the waveform

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~~of~~ said equalized signal including an intersymbol interference component of ~~a~~ one-symbol delayed wave, ~~on the base of~~ based on an intersymbol interferences component corresponding to all the one symbol-delayed waves, ~~by the use of~~ using ~~an~~ intersymbol interferences component corresponding to all ~~of~~ the symbol-delayed waves, ~~by the use of~~ using the impulse response of the radiowave transmission medium estimated by said impulse response estimating means;

area ~~decision~~ determination means for predicting, by ~~deciding~~ determining the ~~existence area~~ extent of ~~a just-preceding symbol of an a one symbol~~ equalized signal, whether or not ~~decision~~ there is any determination error ~~appears because of~~ due to noise interference, said area determination means functioning to carry for ~~carrying out area decision operation~~ determination operations for each of said respective equalized signals of ~~a instant~~ given symbol ~~in a case where any~~ appearance of ~~decision~~ error in determination is predicted, and for generating three signals ~~which~~ that are an equalized signal of the ~~instant~~ given symbol presumed to be correct in its equalized signals, ~~said~~ this determined data as to the given ~~of the~~ instant being obtained by demodulating the equalized signal, and ~~decided~~ a determined piece of data of ~~the one~~ a just preceding symbol being employed for equalizing the just-equalized signal, said ~~decided~~ determined date of the ~~instant~~ given symbol being applied to said first waveform equalizing means to produce said estimated intersymbol interference component corresponding to the one-symbol

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delayed wave; and

means for producing the intersymbol interference component corresponding to more than two symbol-delayed ~~wave~~ waves in order to ~~fed~~ feed back the intersymbol interference component corresponding to more than two symbol-delayed ~~wave~~ waves to said first waveform equalizing means.

2. (currently amended) A decision feedback equalizer according to claim 1, in which said ~~existence area~~ extent of a just-preceding symbol of an equalized signal comprises ~~decidable~~ determinable areas ~~determined for detecting~~ placed so as to detect the expansion of a signal point by on account of noise and at least one ~~uncertainty area of uncertainty determined for detecting~~ placed so as to detect the certainty of a presumed one symbol-preceding decided data, with each of said ~~decidable~~ determinable areas being an area ~~where~~ in which decided determinable data is assumed to be correct ~~since~~ because each of distance of the ~~decided~~ determined from a corresponding proper signal point is smaller than a threshold value TH_1 , each of said ~~decidable~~ determinable being an area ~~where~~ in which decided data is assumed to be in error ~~since~~ because each of the ~~distance~~ distances of each piece of determined ~~decided~~ data from a corresponding proper signal point is larger than a threshold value TH_2 .

3. (currently amended) A decision feedback equalizer according to claim 2, in which said threshold values are determined so that when the threshold value

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TH1 is equal to the threshold value TH_2 : ~~detects~~ , an expansion of a signal point by ~~noise~~ because of noise is detected.